Twelfth Census of the United States.

CENSUS BULLETIN.

No. 177. WASHINGTON, D. C. June 2, 1902.

AGRICULTURE.

COLORADO.

Hon. WILLIAM R. MERRIAM,
Director of the Census.

SIR: I have the honor to transmit herewith, for publication in bulletin form, the statistics of agriculture in the state of Colorado, taken in accordance with the provisions of section 7 of the act of March 3, 1899. This section requires that—

> The schedules relating to agriculture shall comprehend the following topics: Name of occupant of each farm, color of occupant, tenure, acreage, value of farm and improvements, acreage of different products, quantity and value of products, and number and value of live stock. All questions as to quantity and value of crops shall relate to the year ending December thirty-first next preceding the enumeration.

A "farm," as defined by the Twelfth Census, includes all the land, under one management, used for raising crops and pasturing live stock, with the wood lots, swamps, meadows, etc., connected therewith. It includes also the house in which the farmer resides, and all other buildings used by him in connection with his farming operations.

The farms of Colorado, June 1, 1900, numbered 24,700, and were valued at $106,344,035. Of this amount $16,002,512, or 15.0 per cent, represents the value of buildings, and $90,341,523, or 85.0 per cent, the value of land and improvements other than buildings. On the same date the value of farm implements and machinery was $4,746,765, and of live stock, $49,954,311. These values, added to that of farms, give $161,045,111, the "total value of farm property."

The products derived from domestic animals, poultry, and bees, including animals sold or slaughtered on farms, are referred to in this bulletin as "animal products." The total value of all such products, together with the value of all crops, is termed "total value of farm products." This value for 1899 was $33,048,576, of which amount $16,077,988, or 48.6 per cent, represents the value of animal products, and $16,970,588, or 51.4 per cent, the value of crops, including forest products, cut or produced on farms and ranges. The "total value of farm products" for 1899 exceeds that for 1889 by $19,011,766, or 151.6 per cent.

The value of "net farm products," or the "gross farm income," is obtained by deducting from the "total value of farm products" the value of the products fed to live stock on the farms of the producers. In 1899 the reported value of products fed was $6,182,830, leaving $26,865,746 as the gross farm income for that year. The percentage which this amount is of the "total value of farm property" is referred to as the "percentage of income upon investment." For Colorado in 1899 it was 16.7 per cent.

As no reports of expenditures for taxes, interest, insurance, feed for stock, and similar items have been obtained by any census, no statement of net farm income can be given.

Special reports as to the dimensions and cost of the leading irrigation ditches and canals, the area of land under them, methods for the artificial application of water to the growing crops, and other facts relating to irrigation, were obtained by correspondence with farmers, engineers, and others. This correspondence was under the joint direction of Mr. F. H. Newell, chief hydrographer of the Geological Survey, acting as expert special agent for the division of agriculture, and Mr. Clarence J. Blanchard. The office is indebted to the State Engineer of Colorado and his able force of water superintendents and commissioners for important data concerning canals, ditches, etc.

The statistics presented in this bulletin will be treated in greater detail in the final report on agriculture in the United States. The present publication is designed to present a summarized advance statement for Colorado.

Very respectfully,

L. G. Powers.

Chief Statistician for Agriculture.

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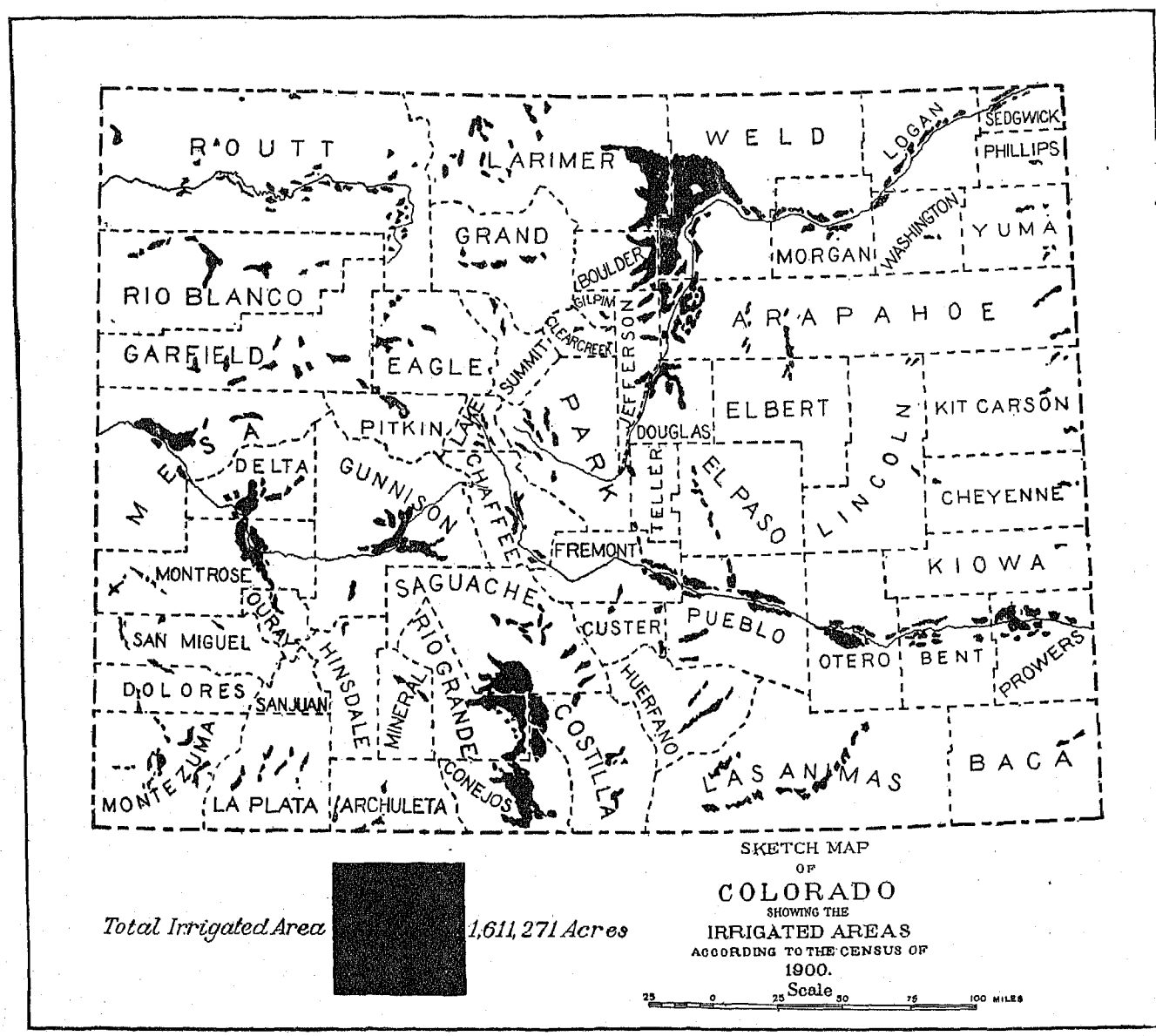


Total Irrigated Area 1,611,271 *Acres*

SKETCH MAP
OF
COLORADO
SHOWING THE
IRRIGATED AREAS
ACCORDING TO THE CENSUS OF
1900.

Scale 25 0 25 50 75 100 MILES

AGRICULTURE IN COLORADO.

GENERAL STATISTICS.

Colorado has a total land area of 103,645 square miles, or 66,332,800 acres, of which 9,474,588 acres, or 14.3 per cent, are included in farms.

The central and western divisions of the state, comprising about two-thirds of its area, are traversed by the principal ranges of the Rocky Mountains. The eastern third is occupied by the great plains, which are not continuous levels, but a series of valleys separated by ridges and watered by numerous rivers. About one-third of the state is well adapted to agriculture, the remainder being better suited for grazing purposes. The soil of the foothills is fertile and among the mountains are rich valleys and fine grazing lands. The arid sands of the plains are generally surface deposits, covering a soil which can be rendered productive by irrigation.

NUMBER AND SIZE OF FARMS.

Table 1 gives, by decades since 1870, the number of farms, the total and average acreage, and the per cent of farm land improved.

TABLE 1.—FARMS AND FARM ACREAGE: 1870 TO 1900.

YEAR.	Number of farms.	NUMBER OF ACRES IN FARMS.				Per cent of farm land improved.
		Total.	Improved.	Unimproved.	Average.	
1900	24,700	9,474,588	2,273,968	7,200,620	383.6	24.0
1890	16,389	4,598,941	1,823,520	2,775,421	280.6	39.6
1880	4,506	1,165,373	616,169	549,204	258.6	52.9
1870	1,738	320,346	95,594	224,752	184.3	29.8

The development of the agricultural resources of the state dates from the early part of the decade 1860 to 1870, at about the time when the territory was organized. Previous to this time the inhabitants consisted, for the most part, of miners, who had settled in the region in 1859, and who had devoted little attention to farming. Since the first agricultural census in 1870, the number of farms has increased rapidly, the greatest gains taking place between 1880 and 1890. In the last decade there was an increase of 50.7 per cent. The total area in farms, also, has increased at a rapid rate, principally through entry of the public domain and purchase of railroad grant lands.

The percentage of farm land improved has decreased since 1880. This is due largely to a more strict construction of the term "improved," by the present census. The increased acreage and production of nearly all crops indicate that there has been little, if any, abandonment of improved land.

FARM PROPERTY AND PRODUCTS.

Table 2 presents a summary of the principal statistics relating to farm property and products for each census year, beginning with 1870.

TABLE 2.—VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND OF FARM PRODUCTS: 1870 TO 1900.

Year.	Total value of farm property.	Land, improvements, and buildings.	Implements and machinery.	Live stock.	Farm products.[1]
1900	$161,045,101	$106,344,035	$4,746,755	$49,954,311	$33,048,576
1890	110,358,040	85,035,180	2,728,850	[2]22,594,010	13,136,810
1880	34,722,650	25,109,223	910,085	[2]8,703,342	5,035,228
1870[3]	6,529,454	3,385,748	272,604	2,871,102	[4]2,335,106

[1] For year preceding that designated.
[2] Exclusive of the value of animals on ranges.
[3] Values for 1870 were reported in depreciated currency. To reduce to specie basis of other years they must be diminished one-fifth.
[4] Includes betterments and additions to live stock.

The value of all classes of farm property has advanced rapidly in the last twenty years, the total value in 1900 being nearly five times as great as in 1880, and 45.9 per cent greater than in 1890. During the last decade there has been an increase of 25.1 per cent in the reported value of land, improvements, and buildings; of 73.9 per cent in that of implements and machinery; and of 121.1 per cent in that of live stock. Of the increase of $50,687,071 in the total value of farm property, $21,308,855, or 42.0 per cent, represents the gain in the value of land, improvements, and buildings; $27,360,301, or 54.0 per cent, in that of live stock; and $2,017,915, or 4.0 per cent, in that of implements and machinery. The value of farm products as returned in 1899 was 151.6 per cent greater than in 1889. But a portion of this increase, and of that noted in the case of implements and machinery, is doubtless the result of a more detailed enumeration in 1900 than in previous census years. The large increase in the reported value of live stock is also due in part to a more complete enumeration.

In 1880 and in 1890 domestic animals on ranges were not enumerated, and the values of live stock shown in the above table are therefore deficient for both these years. The value of domestic animals on ranges in 1890 is estimated to have been $6,659,016, which would make the total value of live stock in that year $29,253,026. Computed on this basis the increase in the value of live stock between 1890 and 1900 was approximately 41.4 per cent.

COUNTY STATISTICS.

In Table 3 general agricultural statistics are given by counties.

TABLE 3.—NUMBER AND ACREAGE OF FARMS, AND VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, JUNE 1, 1900, WITH GROSS INCOME OF 1899, AND EXPENDITURES IN 1899 FOR LABOR AND FERTILIZERS, BY COUNTIES.

COUNTIES.	NUMBER OF FARMS.		ACRES IN FARMS.		VALUES OF FARM PROPERTY.				Gross income (products of 1899 not fed to live stock).	EXPENDITURES.	
	Total.	With buildings.	Total.	Improved.	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		Labor.	Fertilizers.
The State	24,700	23,532	9,474,588	2,273,968	$90,341,528	$16,002,512	$4,746,755	$49,954,311	$26,865,746	$4,100,905	$23,225
Arapahoe	2,105	2,029	904,708	202,047	11,904,190	1,858,050	408,490	3,126,165	2,677,537	444,460	9,970
Archuleta	215	190	41,298	10,372	277,460	71,930	23,210	913,011	319,330	32,370	----
Baca	197	135	77,751	7,382	127,050	40,860	20,860	549,992	80,807	13,100	----
Bent	274	256	118,485	38,858	1,137,100	131,920	61,160	1,295,766	670,541	94,500	----
Boulder	987	953	191,373	91,708	4,338,615	892,875	216,340	789,626	920,886	126,710	1,470
Chaffee	242	236	47,065	14,726	458,300	151,790	42,480	256,018	217,098	30,430	----
Cheyenne	57	49	116,191	2,740	141,630	30,370	7,520	461,403	141,717	14,040	----
Clear Creek	81	29	10,838	1,196	73,500	15,780	3,350	18,714	11,487	2,470	----
Conejos	617	529	208,245	98,960	1,804,710	284,870	94,510	1,164,600	538,772	85,390	----
Costilla	331	311	634,205	79,678	1,673,870	137,810	54,970	586,909	311,668	30,890	----
Custer	351	327	98,607	28,111	837,490	172,390	53,210	500,386	180,971	31,670	----
Delta	874	832	98,689	38,016	2,667,550	392,480	151,980	1,038,780	788,219	99,500	----
Dolores	36	22	3,382	942	22,110	5,820	3,440	114,759	19,577	2,800	----
Douglas	457	448	296,302	39,165	1,946,390	366,150	77,290	558,953	359,661	42,390	80
Eagle	208	199	52,352	19,709	811,775	146,700	52,400	625,196	325,574	72,810	----
Elbert	579	574	502,365	40,460	1,678,010	366,500	107,450	1,144,875	432,945	58,160	----
El Paso	729	720	566,790	62,408	2,361,554	675,945	118,250	1,297,117	651,624	106,570	----
Fremont	636	590	109,488	20,512	3,089,270	520,900	97,420	673,519	472,293	92,000	600
Garfield	537	482	81,357	29,002	1,503,770	270,810	120,080	1,086,965	557,979	92,400	----
Gilpin	49	49	12,085	2,110	50,770	30,680	5,510	22,999	26,129	3,330	----
Grand	179	168	66,538	18,504	502,100	63,930	33,940	380,615	133,812	31,970	----
Gunnison	289	234	52,795	28,163	577,000	154,475	61,340	686,472	280,738	71,120	200
Hinsdale	35	32	5,288	1,707	41,580	11,490	3,570	96,320	36,893	2,700	----
Huerfano	486	457	138,421	25,466	695,470	132,150	45,300	657,029	257,067	53,710	----
Jefferson	1,050	1,028	225,230	61,224	6,003,617	1,045,648	194,110	769,728	1,013,097	198,519	2,880
Kiowa	138	116	71,957	4,138	114,070	62,810	14,080	758,815	353,417	17,860	----
Kit Carson	305	289	88,344	19,581	154,860	97,710	37,760	676,581	115,352	18,290	----
Lake	71	68	19,724	7,636	420,320	76,670	19,950	186,696	152,902	25,510	200
La Plata	297	257	60,089	14,491	628,020	211,695	81,405	452,267	225,418	43,130	300
Larimer	1,412	1,382	543,468	180,358	5,837,718	1,189,015	328,720	2,569,700	1,970,665	280,630	200
Las Animas	1,037	991	419,503	38,441	1,565,820	302,200	125,490	1,850,724	648,944	118,450	100
Lincoln	188	124	163,144	8,195	269,885	83,025	17,860	819,783	202,134	47,510	----
Logan	413	386	182,513	57,639	1,421,440	218,820	66,820	1,737,762	293,356	66,670	----
Mesa	747	713	68,018	34,205	2,143,985	408,360	120,960	1,320,817	556,501	96,190	----
Mineral	48	42	11,784	2,929	49,524	19,575	5,880	49,429	23,176	7,400	----
Montezuma	261	240	46,072	15,201	435,640	135,340	38,390	353,917	201,454	21,520	125
Montrose	524	457	88,349	36,884	1,535,330	253,850	96,220	1,012,104	552,277	100,050	----
Morgan	378	361	125,074	43,282	1,370,000	232,140	68,740	1,156,362	601,010	93,290	----
Otero	814	780	244,594	68,036	3,562,360	433,270	157,450	2,335,016	1,089,341	156,920	600
Ouray	128	128	25,673	11,184	879,445	86,270	32,200	256,801	169,278	30,660	----
Park	220	213	212,801	40,258	1,260,203	265,030	66,670	661,653	368,615	88,420	80
Phillips	244	239	69,626	20,026	218,490	110,100	39,840	504,057	142,837	6,780	----
Pitkin	170	167	35,363	12,583	586,000	93,250	45,420	242,291	262,378	44,010	100
Prowers	478	445	217,332	58,172	2,569,998	349,260	106,974	1,780,010	465,688	65,750	660
Pueblo	663	634	478,821	40,821	3,511,040	408,680	115,480	1,321,522	691,698	90,070	1,850
Rio Blanco	264	255	68,124	21,346	883,980	148,250	59,150	1,336,978	207,296	63,260	----
Rio Grande	361	347	173,448	78,141	1,736,790	212,165	89,480	442,625	404,683	48,980	120
Routt	703	662	190,503	58,977	1,676,530	292,340	118,600	2,547,286	716,952	121,360	----
Saguache	406	385	329,337	119,687	2,139,023	238,610	98,590	1,102,353	606,803	78,480	----
San Juan	6	4	55	18	1,025	1,500	155	16,048	2,904	750	----
San Miguel	229	218	45,566	10,088	442,360	106,715	53,660	512,531	248,659	28,730	70
Sedgwick	156	140	51,014	9,209	302,640	56,835	12,340	355,560	81,668	4,630	----
Summit	77	73	13,676	4,031	153,750	31,410	6,730	108,138	37,054	5,480	70
Teller	148	141	31,588	4,685	218,250	79,735	15,438	168,010	167,229	13,135	----
Washington	201	197	107,440	17,961	272,540	82,090	27,950	768,425	147,600	24,420	----
Weld	2,002	1,959	556,044	251,307	9,484,426	1,610,214	601,920	2,949,360	3,528,928	505,260	8,550
Yuma	291	281	93,581	30,145	827,050	182,650	32,388	838,045	194,042	23,360	----
Southern Ute [1]	14	14	2,240	237	4,000	1,110	1,480	1,169	4,476	----	----

[1] Indian reservation.

During the last decade the number of farms increased in most of the counties. In each of twelve counties, the number of farms reported in 1900 is more than double that of ten years before, the largest gain being in Montezuma county, where there were more than seven times as many farms in 1900 as there were in 1890. Eight counties show decreases, the largest of which is 55.8 per cent in Baca county.

The portion of the total land surface included in farms in 1900 varied from 0.02 per cent in San Juan county to 52.1 per cent in Douglas county, and the average size of farms, from 9 acres in San Juan county to 1,916 in Costilla county.

The total acreage in farms increased during the last decade in all counties, except Phillips, Montrose, Yuma, and Sedgwick, which reported decreases of 26.2 per cent, 19.3 per cent, 14.9 per cent, and 3.2 per cent, respectively. The greatest relative increase was in Cheyenne county, where the acreage in 1900 was thirteen times that reported in 1890; in Costilla the increase was nearly tenfold. In 19 counties the area of improved farm land has decreased in the last decade, but in 12 others it has nearly doubled.

In the value of farms all counties, with the exception of 13, show increases since 1890. The counties showing the greatest losses are Gilpin, with a decrease of 68.4 per cent; Phillips, 46.2 per cent; Washington, 33.0 per cent; and Sedgwick, 22.6 per cent. Arapahoe and Douglas also show decreases, but as the value of the farm products of these counties in 1899 exceeds that reported for 1889, it is probable that the valuation of farm land reported to the Eleventh Census was, to some extent, speculative, and that there has been little, if any, actual loss. The average values per farm in 1900 vary from $421 in San Juan county to $6,999 in Lake county.

In all but 9 counties, the value of implements and machinery has increased greatly during the last decade, 21 counties showing a value more than twice as great, and one, Prowers, a sixteenfold increase. Sedgwick, Phillips, Washington, Custer, and Montrose counties are among those showing losses.

Since 1890 there has been a large increase throughout the state in the value of live stock, decreases appearing in 4 counties only. In Prowers county the value in 1900 was eighteen times as great as in 1890, in Otero county, eight times, and in Morgan and Delta counties, four times as great.

The average value per farm of the products of 1899 not fed to live stock varies from $371 in Clear Creek county to $2,561 in Kiowa county.

The average expenditure per farm for labor, including the value of board furnished, varies from $28 in Phillips county to $402 in Park county. The average expenditure for fertilizers is less than $1 per farm, and the total expenditure for the state is 7.4 per cent less than it was in 1890. Three-fourths of the total amount was expended in Arapahoe, Jefferson, and Weld counties.

CHANGES IN FARMING POPULATION.

The first agricultural census of Colorado, taken in 1870, showed 1,738 farms, and 6,462 males engaged in agriculture, 2,659 of whom were classed as farm laborers. The census of 1880 reported 4,506 farms, and 13,462 males engaged thereon, 2,525 of whom were reported as farm laborers.

The fact that in both years the number of males reported as engaged in agriculture, other than farm laborers, largely exceeded the number of farms, indicates either that many persons who were thus reported were really engaged in other occupations, or that many farms were omitted from the enumeration in both years.

In 1890 there were reported in Colorado 16,389 farms, 36,134 males engaged in agriculture, and 9,926 farm laborers, showing increases for the decade of 263.7 per cent in the number of farms, of 168.4 per cent in the number of males engaged in agriculture, and of 293.1 per cent in the number of farm laborers. The fact that there was a greater relative increase during this decade in the number of farms than in the number of persons engaged in agriculture, when considered in connection with the changes shown in the reports for 1870 and 1880, makes it appear very probable that a large number of farms were omitted from the enumeration, both in 1870 and in 1880, and that a considerable part of the increase shown for the decade from 1880 to 1890 was due to a more perfect census of agriculture in the latter year.

The occupation tables for 1900 are not yet available, but in the decade from 1890 to 1900, the number of farms increased 50.7 per cent, while the rural population, which includes not only those engaged in agriculture but also those employed in small mining centers throughout the state, increased only 14.2 per cent. Without the occupation tables, it is impossible to draw any definite conclusions, but the flourishing condition of agricultural and mining interests in Colorado in recent years makes it probable, after allowing for a more perfect census in 1900 than ever before, that there has been a greater relative increase in the last decade in the number of persons operating farms as owners and tenants than in the number of persons working on farms for wages, and consequently, that the average status of those employed on farms has been steadily improving.

FARM TENURE.

Table 4 gives a comparative exhibit of the number of farms operated by owners and tenants in 1880, 1890, and 1900. Tenants are subdivided into two groups: (1) "Cash tenants" who pay a cash rental or a stated amount of labor or farm produce, and (2) "share tenants" who pay as rental a share of the products. In Table 5 the tenure of farms for 1900 is given by race of farmer, and the farms operated by owners are subdivided into groups, designated as farms operated by "owners," "part owners," "owners and tenants," and "managers." These groups comprise, respectively: (1) Farms operated by individuals who own all the land they cultivate; (2) farms operated by individuals who own a part of the land and rent the remainder from others; (3) farms operated under the joint direction and by the united labor of two or more individuals, one owning the farm or a part of it, and the other, or others, owning no part, but receiving for supervision or labor a share of the products; and (4) farms operated by individuals who receive for their supervision and other services a fixed salary from the owners.

TABLE 4.—NUMBER AND PER CENT OF FARMS OF SPECIFIED TENURES: 1880 TO 1900.

YEAR.	Total number of farms.	NUMBER OF FARMS OPERATED BY—			PER CENT OF FARMS OPERATED BY—		
		Owners.[1]	Cash tenants.	Share tenants.	Owners.[1]	Cash tenants.	Share tenants.
1900	24,700	19,119	2,230	3,351	77.4	9.0	13.6
1890	16,389	14,546	585	1,258	88.7	3.6	7.7
1880	4,506	3,922	165	419	87.0	3.7	9.3

[1] Including "part owners," "owners and tenants," and "managers."

TABLE 5.—FARMS OF SPECIFIED TENURES, JUNE 1, 1900, CLASSIFIED BY RACE OF FARMER.

RACE.	Total number of farms.	Owners.	Part owners.	Owners and tenants.	Managers.	Cash tenants.	Share tenants.
The State	24,700	15,785	2,368	136	880	2,230	3,351
White	24,627	15,662	2,363	136	880	2,227	3,339
Colored[1]	73	53	5	----	----	3	12

[1] Comprising 58 negroes and 15 Indians.

The number of farms operated by owners is nearly five times as great in 1900 as in 1880; the number operated by cash tenants, over thirteen times; and the number operated by share tenants, nearly eight times as great. Between 1890 and 1900, the number operated by owners increased 31.4 per cent; by cash tenants, 281.2 per cent; and by share tenants, 166.4 per cent. In 1880, 71.7 per cent of all tenants were share tenants; in 1890, 68.3 per cent; and in 1900, 60.0 per cent. This change indicates a growing sentiment on the part of both landlord and tenant in favor of the cash payment system, as well as greater independence and financial responsibility on the part of the tenant. The farms operated by share tenants are principally hay and grain farms, while those conducted by cash tenants, as a rule, are live-stock and dairy farms.

Of the farms of the state, 99.7 per cent are operated by white farmers, and 0.3 per cent, by colored farmers. Of the white farmers, 73.8 per cent own all or a part of the land they operate, and 26.2 per cent operate farms owned by others. Of the colored farmers, 58 are negroes and 15 are Indians, all of the Indians and nearly three-fourths of the negroes, being owners or part owners.

No previous census has reported the number of farms operated by "part owners," "owners and tenants," or "managers," but it is believed that the number conducted by the last-named class is constantly increasing.

FARMS CLASSIFIED BY RACE OF FARMER AND BY TENURE.

Tables 6 and 7 present the principal statistics for farms classified by race of farmer and by tenure.

TABLE 6.—NUMBER AND ACREAGE OF FARMS, AND VALUE OF FARM PROPERTY, JUNE 1, 1900, CLASSIFIED BY RACE OF FARMER AND BY TENURE, WITH PERCENTAGES.

RACE OF FARMER, AND TENURE.	Number of farms.	NUMBER OF ACRES IN FARMS.			VALUE OF FARM PROPERTY.	
		Average.	Total.	Per cent.	Total.	Per cent.
The State	24,700	383.6	9,474,588	100.0	$161,045,111	100.0
White farmers	24,627	384.2	9,461,241	99.7	160,887,318	99.9
Colored farmers[1]	73	182.8	13,347	0.3	157,793	0.1
Owners	15,785	206.9	3,265,081	34.4	75,334,633	46.8
Part owners	2,368	1,204.2	2,851,462	30.1	27,985,385	17.4
Owners and tenants	136	369.8	50,298	0.5	1,090,788	0.7
Managers	880	2,031.3	1,787,515	18.9	25,296,587	15.7
Cash tenants	2,230	361.0	804,968	8.5	13,155,121	8.1
Share tenants	3,351	216.4	725,264	7.6	18,182,597	11.3

[1] Comprising 58 negroes and 15 Indians.

TABLE 7.—AVERAGE VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND AVERAGE GROSS INCOME PER FARM, WITH PER CENT OF GROSS INCOME ON TOTAL INVESTMENT IN FARM PROPERTY, CLASSIFIED BY RACE OF FARMER AND BY TENURE.

RACE OF FARMER, AND TENURE.	AVERAGE VALUES PER FARM OF—					Per cent of gross income on total investment in farm property.
	Farm property, June 1, 1900.				Gross income (products of 1899 not fed to live stock).	
	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		
The State	$3,658	$643	$192	$2,022	$1,088	16.7
White farmers	3,664	649	193	2,027	1,090	16.7
Colored farmers[1]	1,463	280	90	329	395	18.3
Owners	2,538	603	169	1,478	778	16.3
Part owners	6,667	913	276	3,962	1,852	15.7
Owners and tenants	4,395	1,061	219	2,345	1,107	13.8
Managers	13,955	1,003	428	13,351	5,289	18.4
Cash tenants	3,917	672	162	1,148	872	14.8
Share tenants	3,881	544	199	802	1,040	19.2

[1] Comprising 58 negroes and 15 Indians.

The average values of farm property and products per farm are much lower for the farms of colored farmers than for those of white farmers. The higher percentage of gross income for farms of colored farmers is not due to superior farm management, but to the fact that the labor of the negro, whose farm and investment of capital are generally small, counts for more relatively than the labor of a white farmer with a larger and more valuable farm.

Except in the item of buildings, the highest average values are reported by managers. The high average value of live stock on farms operated by managers indicates that most of them are stock ranches, and their large average acreage sustains this view.

The total value of the farm property of the 15 Indian farmers was $7,634, and that of their products, $2,097. They operated an area of 2,190 acres.

FARMS CLASSIFIED BY AREA.

Tables 8 and 9 present the principal statistics for farms classified by area.

TABLE 8.—NUMBER AND ACREAGE OF FARMS, AND VALUE OF FARM PROPERTY, JUNE 1, 1900, CLASSIFIED BY AREA, WITH PERCENTAGES.

AREA.	Number of farms.	NUMBER OF ACRES IN FARMS.			VALUE OF FARM PROPERTY.	
		Average.	Total.	Per cent.	Total.	Per cent.
The State	24,700	383.6	9,474,588	100.0	$161,045,111	100.0
Under 3 acres	794	1.8	1,432	(1)	3,716,924	2.3
3 to 9 acres	1,047	7.0	7,347	0.1	2,778,023	1.7
10 to 19 acres	1,032	13.3	13,744	0.1	3,588,979	2.2
20 to 49 acres	2,122	34.1	72,403	0.8	6,073,085	3.8
50 to 99 acres	2,526	78.8	199,057	2.1	9,582,952	5.9
100 to 174 acres	9,104	154.8	1,409,466	14.9	35,839,978	22.3
175 to 259 acres	1,578	216.7	341,241	3.6	10,224,236	6.3
260 to 499 acres	3,799	358.1	1,360,382	14.4	27,346,497	17.0
500 to 999 acres	1,466	712.0	1,043,856	11.0	18,847,930	11.7
1,000 acres and over	1,237	4,062.8	5,025,660	53.0	43,096,507	26.8

[1] Less than one-tenth of 1 per cent.

TABLE 9.—AVERAGE VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND AVERAGE GROSS INCOME PER FARM, WITH PER CENT OF GROSS INCOME ON TOTAL INVESTMENT IN FARM PROPERTY, CLASSIFIED BY AREA.

AREA.	AVERAGE VALUES PER FARM OF—					Per cent of gross income on total investment in farm property.
	Farm property, June 1, 1900.				Gross income (products of 1899 not fed to live stock).	
	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		
The State	$3,658	$648	$192	$2,022	$1,088	16.7
Under 3 acres	400	422	64	3,795	1,406	30.0
3 to 9 acres	1,605	702	88	263	547	20.6
10 to 19 acres	2,357	704	129	288	615	17.7
20 to 49 acres	1,843	476	112	431	491	17.2
50 to 99 acres	2,514	392	162	706	697	18.5
100 to 174 acres	2,203	458	154	1,122	689	17.5
175 to 259 acres	4,138	721	244	1,402	1,170	18.0
260 to 499 acres	4,179	715	246	2,058	1,196	16.6
500 to 999 acres	6,960	1,046	323	4,528	2,022	15.7
1,000 acres and over	18,608	2,143	516	13,573	4,946	14.2

The group of farms of 1,000 acres, or over, comprises more than one-half of the total farm acreage, but only a little more than one-fourth of the value of farm property. The percentage of gross income on total investment in farm property is smaller for this group than for any other, while that for farms of less than 3 acres each is higher. The high average value of live stock for farms of this latter group is due to the fact that many of them are operated by stock raisers who pasture their cattle on ranges or the public domain. The high average and percentage of gross income for this group are doubtless due to the fact that it includes, besides the ranges just mentioned, 33 florists' establishments, and a number of city dairies. It should be borne in mind that the income from these industries is determined, not so much by the acreage of land used, as by the capital invested in buildings, implements, and live stock, and by the amounts expended for labor and fertilizers.

The group of farms between 100 and 174 acres comprises by far the largest number of farms of any single group and the largest aggregate acreage of any except the one comprising farms of 1,000 acres and over. The predominance of this group is due to the practice of taking up land in 160 acre, or quarter-section tracts. The next largest group is that of farms having 260 to 499 acres, which includes the 320 acre, or half-section holdings.

The average gross incomes per acre for the various groups classified by area are as follows: Farms under 3 acres, $779.81; 3 to 9 acres, $78.00; 10 to 19 acres, $46.18; 20 to 49 acres, $14.39; 50 to 99 acres, $8.85; 100 to 174 acres, $4.45; 175 to 259 acres, $5.39; 260 to 499 acres, $3.34; 500 to 999 acres, $2.84; 1,000 acres and over, $1.22.

FARMS CLASSIFIED BY PRINCIPAL SOURCE OF INCOME.

Tables 10 and 11 present the leading statistics for farms classified by principal source of income. If the value of the hay and grain raised on any farm exceeds that of any other crop and constitutes 40 per cent of the products not fed to live stock, the farm is classified as a hay and grain farm. If vegetables are the leading crop, constituting 40 per cent of the value of products, it is a vegetable farm. The farms of the other groups are classified according to the same general principle. "Miscellaneous" farms are those whose operators do not derive their principal income from any one class of products. Farms for which no income was reported are classified according to the agricultural operations upon other farms in the same locality.

TABLE 10.—NUMBER AND ACREAGE OF FARMS, AND VALUE OF FARM PROPERTY, JUNE 1, 1900, CLASSIFIED BY PRINCIPAL SOURCE OF INCOME, WITH PERCENTAGES.

PRINCIPAL SOURCE OF INCOME.	Number of farms.	NUMBER OF ACRES IN FARMS.			VALUE OF FARM PROPERTY.	
		Average.	Total.	Per cent.	Total.	Per cent.
The State	24,700	383.6	9,474,588	100.0	$161,045,111	100.0
Hay and grain	7,070	265.9	1,880,052	19.8	44,523,564	27.6
Vegetables	2,363	114.9	271,409	2.9	9,943,867	6.2
Fruit	651	57.1	37,195	0.4	3,408,191	2.1
Live stock	8,761	696.5	6,102,102	64.4	79,385,132	49.3
Dairy produce	3,867	223.8	865,351	9.1	16,518,947	10.3
Sugar	50	96.4	4,821	0.1	165,079	0.1
Flowers and plants	53	2.9	153	(1)	686,270	0.4
Nursery products	21	36.4	765	(1)	127,673	0.1
Miscellaneous	1,864	167.8	312,740	3.3	6,285,388	3.9

[1] Less than one-tenth of 1 per cent.

TABLE 11.—AVERAGE VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND AVERAGE GROSS INCOME PER FARM, WITH PER CENT OF GROSS INCOME ON TOTAL INVESTMENT IN FARM PROPERTY, CLASSIFIED BY PRINCIPAL SOURCE OF INCOME.

PRINCIPAL SOURCE OF INCOME.	AVERAGE VALUES PER FARM OF—					Per cent of gross income on total investment in farm property.
	Farm property, June 1, 1900.				Gross income (products of 1899 not fed to live stock).	
	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		
The State	$3,658	$648	$192	$2,022	$1,088	16.7
Hay and grain	4,564	652	223	859	897	14.2
Vegetables	2,957	606	187	458	972	23.1
Fruit	3,954	757	162	362	978	18.7
Live stock	3,953	673	202	4,233	1,583	17.5
Dairy produce	2,375	643	145	1,109	604	14.1
Sugar	2,613	382	116	211	410	12.4
Flowers and plants	8,705	3,933	278	32	3,744	28.9
Nursery products	4,851	955	169	105	2,442	40.2
Miscellaneous	2,147	448	143	634	598	17.7

It is seen by Table 10 that live-stock, hay and grain, and dairy farms are the leading classes of farms in the state, the three together making up 93.3 per cent of the acreage, and 87.2 per cent of the value of farm property for all farms. Of the three classes, live-stock farms are the most important, with 64.4 per cent of the total acreage and 49.3 per cent of the value of farm property.

The average values per acre of products not fed to live stock are as follows: For farms deriving their principal in-

come from flowers and plants, $1,296.75; nursery products, $67.02; fruits, $17.12; vegetables, $8.47; sugar, $4.26; miscellaneous, $3.56; hay and grain, $3.37; dairy produce, $2.70; and live stock, $2.27. In computing these averages the total area of the farms is used and not the acreage devoted to the crop from which the principal income is derived.

The wide variations shown in the averages and percentages of gross income are largely due to the fact that in computing gross income, no deduction is made for expenditures. For florists' establishments, nurseries, and market gardens the average expenditure for such items as labor and fertilizers represents a far larger percentage of the gross income than in the case of "hay and grain," "live stock," or "miscellaneous" farms. Were it possible to present the average net income, the variations shown would be comparatively slight.

FARMS CLASSIFIED BY REPORTED VALUE OF PRODUCTS NOT FED TO LIVE STOCK.

Tables 12 and 13 present data relating to farms classified by reported value of products not fed to live stock.

TABLE 12.—NUMBER AND ACREAGE OF FARMS, AND VALUE OF FARM PROPERTY, JUNE 1, 1900, CLASSIFIED BY REPORTED VALUE OF PRODUCTS NOT FED TO LIVE STOCK, WITH PERCENTAGES.

VALUE OF PRODUCTS NOT FED TO LIVE STOCK.	Number of farms.	NUMBER OF ACRES IN FARMS.			VALUE OF FARM PROPERTY.	
		Average.	Total.	Per cent.	Total.	Per cent.
The State	24,700	383.6	9,474,586	100.0	$161,045,111	100.0
$0	1,020	331.3	337,889	3.6	4,209,560	2.6
$1 to $49	979	156.5	153,212	1.6	1,848,340	1.1
$50 to $99	1,181	157.2	185,678	1.9	2,423,450	1.5
$100 to $249	3,691	169.3	624,721	6.6	9,187,382	5.7
$250 to $499	4,581	191.8	878,779	9.3	14,919,688	9.3
$500 to $999	5,579	249.5	1,391,955	14.7	27,367,420	17.0
$1,000 to $2,499	5,270	391.9	2,065,401	21.8	43,345,320	26.9
$2,500 and over	2,399	1,599.4	3,836,953	40.5	57,743,951	35.9

TABLE 13.—AVERAGE VALUES OF SPECIFIED CLASSES OF FARM PROPERTY, AND AVERAGE GROSS INCOME PER FARM, WITH PER CENT OF GROSS INCOME ON TOTAL INVESTMENT IN FARM PROPERTY, CLASSIFIED BY REPORTED VALUE OF PRODUCTS NOT FED TO LIVE STOCK.

VALUE OF PRODUCTS NOT FED TO LIVE STOCK.	AVERAGE VALUES PER FARM OF—					Per cent of gross income on total investment in farm property.
	Farm property, June 1, 1900.				Gross income (products of 1899 not fed to live stock).	
	Land and improvements (except buildings).	Buildings.	Implements and machinery.	Live stock.		
The State	$3,658	$648	$192	$2,022	$1,088	16.7
$0	1,361	231	68	2,467		
$1 to $49	1,045	222	65	556	34	1.8
$50 to $99	1,134	264	75	559	66	3.2
$100 to $249	1,399	351	100	629	161	6.5
$250 to $499	1,806	487	126	858	356	10.9
$500 to $999	2,955	550	177	1,193	696	14.2
$1,000 to $2,499	5,100	907	263	1,955	1,502	18.3
$2,500 and over	12,418	1,554	501	9,597	5,307	22.0

The absence of reported income for farms of the first group is due in part to the inability of the enumerators to secure complete reports for farms which had changed hands shortly prior to the date of enumeration. Frequently the person in charge June 1, 1900, could not give definite information concerning the products of the preceding year. This is also true of some of the farms with reported incomes of less than $100. To this extent the reports fall short of giving a complete statement of farm income in 1899.

Some of the farms reporting no income were doubtless country places held for pleasure and not profit, and others were homesteads taken up in the spring of 1900. The high average value of live stock indicates that some were cattle ranches which reported no sales in 1899. Many of the farms of this group report products fed to live stock.

LIVE STOCK.

At the request of the various live-stock associations of the country, a new classification of domestic animals was adopted for the census of 1900. The age grouping for neat cattle was determined by their present and prospective relations to the dairy industry and the supply of meat products. Horses and mules are classified by age, and neat cattle by age and sex. The new classification permits a very close comparison with previous census reports.

Table 14 presents a summary of live-stock statistics.

TABLE 14.—DOMESTIC ANIMALS, FOWLS, AND BEES, ON FARMS AND RANGES, JUNE 1, 1900, WITH TOTAL AND AVERAGE VALUES, AND NUMBER OF DOMESTIC ANIMALS NOT ON FARMS.

LIVE STOCK.	Age in years.	ON FARMS AND RANGES.			NOT ON FARMS OR RANGES.
		Number.	Value.	Average value.	Number.
Calves	Under 1	269,154	$3,130,465	$11.63	2,625
Steers	1 and under 2	204,101	4,130,902	20.24	849
Steers	2 and under 3	136,775	3,927,154	28.71	1,229
Steers	3 and over	62,069	2,120,710	34.17	2,587
Bulls	1 and over	26,487	1,460,909	55.26	172
Heifers	1 and under 2	151,627	3,156,858	20.82	1,563
Cows kept for milk	2 and over	100,116	3,797,997	37.94	3,631
Cows and heifers not kept for milk.	2 and over	483,039	13,807,743	28.59	3,047
Colts	Under 1	23,645	291,280	12.32	503
Horses	1 and under 2	27,360	530,164	19.38	503
Horses	2 and over	185,541	6,487,282	34.96	35,757
Mule colts	Under 1	893	22,803	24.58	19
Mules	1 and under 2	874	33,800	38.10	22
Mules	2 and over	5,017	269,944	53.81	2,371
Asses and burros	All ages	5,513	52,010	9.43	2,029
Lambs	Under 1	691,991	1,144,294	1.65	281
Sheep (ewes)	1 and over	1,089,680	3,417,781	3.14	921
Sheep (rams and wethers).	1 and over	263,143	1,022,872	3.89	161
Swine	All ages	101,198	482,722	4.77	3,947
Goats	All ages	37,433	73,141	1.95	3,946
Fowls:[1]					
Chickens[2]		968,761	393,219		
Turkeys		30,781			
Geese		2,576			
Ducks		15,002			
Bees (swarms of)		59,756	195,096	3.26	
Unclassified			6,215		
Value of all livestock			49,954,311		

[1] The number reported is of fowls over 3 months old. The value is of all old and young.
[2] Including Guinea fowls.

The total value of all live stock on farms and ranges, June 1, 1900, was $49,954,311. Of this amount, 14.6 per cent represents the value of horses; 7.6 per cent, that of dairy cows; 63.5 per cent, that of other neat cattle; 11.2

per cent, that of sheep; and 3.1 per cent, that of all other live stock.

The low average value of asses and burros is due to the fact that the majority of these animals are the small burros of the mountainous districts. No reports were secured of the value of live stock not on farms and ranges, but it is probable that such animals have higher average values than farm or range animals. Allowing the same averages, however, the total value of all live stock in the state, exclusive of poultry and bees not on farms, would be approximately $52,018,800.

CHANGES IN LIVE STOCK ON FARMS AND RANGES.

The following table shows the changes since 1870 in the numbers of the most important domestic animals.

TABLE 15.—NUMBER OF SPECIFIED DOMESTIC ANIMALS ON FARMS AND RANGES: 1870 TO 1900.

YEAR.	Dairy cows.	Other neat cattle.	Horses.	Mules and asses.	Sheep.[1]	Swine.
1900	100,116	1,333,202	236,546	12,297	1,352,823	101,198
1890[2]	76,948	640,913	155,170	7,139	717,990	64,358
1880[2]	28,770	318,069	42,257	2,581	746,448	7,656
1870	25,017	45,719	6,446	1,173	120,928	5,509

[1] Lambs not included.
[2] Exclusive of animals on ranges.

Since the live-stock enumeration in 1880 and in 1890 did not include domestic animals on ranges, the figures presented in the table for these years are not comparable with the figures of 1900. The number of animals on ranges in 1890 was estimated by special agents to be as follows: All neat cattle, 448,681; horses, 31,209; mules and asses, 65; sheep, 178,820; swine, 33. The census shows a marked increase in dairy cows, the number reported in 1900 being four times as great as the number reported thirty years before, and 23,168, or 30.1 per cent greater than in 1890. The number of "other neat cattle" given for 1900 includes 269,154 calves. Whether any calves were reported in 1890 under this designation is uncertain. If not, the number of calves in 1900 should be deducted when making comparisons with reports for previous years, in which case the increase during the last decade in the number of "other neat cattle" over 1 year of age would be only 66.0 per cent, instead of 108.0 per cent, as indicated by the above table.

The number of horses has increased rapidly since 1870; taking into account the estimated number on ranges in 1890, the per cent of increase in the last decade was 26.9. Since 1890, mules and asses have increased in number 72.3 per cent, and swine, 57.2 per cent. Nearly one-third of the swine in the state are reported in Weld, Arapahoe, and Morgan counties.

In the number of sheep there was a slight decrease from 1880 to 1890, but since 1890 there has been a gain of 634,833, or 88.4 per cent. Sheep raising is confined in general to the southern counties, although Weld and Morgan counties report comparatively large numbers.

In comparing the poultry report for 1900 (see Table 14) with that of 1890, it should be borne in mind that in 1900 the enumerators were instructed not to report fowls less than 3 months old, while in 1890 there was no such limitation. During the past decade geese have increased in number 135.0 per cent; turkeys, 47.5 per cent; chickens, 36.3 per cent; and ducks, 28.9 per cent.

ANIMAL PRODUCTS.

Table 16 is a summarized statement of the products of the animal industry.

TABLE 16.—QUANTITIES AND VALUES OF SPECIFIED ANIMAL PRODUCTS, AND VALUES OF POULTRY RAISED, ANIMALS SOLD, AND ANIMALS SLAUGHTERED, ON FARMS, IN 1899.

PRODUCTS.	Unit of measure.	Quantity.	Value.
Wool	Pounds	8,543,937	$1,115,331
Mohair and goat hair	Pounds	1,843	550
Milk	Gallons	[1] 38,440,111	[2] 3,778,901
Butter	Pounds	4,932,482	
Cheese	Pounds	103,184	
Eggs	Dozens	5,704,290	852,978
Poultry			687,536
Honey	Pounds	1,732,630	171,740
Wax	Pounds	24,930	
Animals sold			8,477,587
Animals slaughtered			1,093,365
Total			16,077,988

[1] Comprises all milk produced, whether sold, consumed, or made into butter or cheese.
[2] Comprises the value of milk sold and consumed, and of butter and cheese made.

The value of animal products in 1899 was $16,077,988, or 48.6 per cent of the total value of all farm products, and 59.8 per cent of the gross farm income. Of the above amount, 59.5 per cent represents the value of animals sold and animals slaughtered on farms; 23.5 per cent, that of dairy produce; 9.0 per cent, that of poultry and eggs; 6.9 per cent, that of wool and mohair; and 1.1 per cent, that of honey and wax.

ANIMALS SOLD AND SLAUGHTERED.

The aggregate value of animals sold and slaughtered on farms and ranges in 1899 was $9,570,952, or 35.6 per cent of the gross farm income. Of all farmers reporting live stock, 10,949, or 46.1 per cent, reported sales of live animals, and 10,529, or 44.3 per cent, reported animals slaughtered. The average receipts per farm from the sale of live animals in 1899 were $774.28, and the average value per farm of animals slaughtered was $103.84.

DAIRY PRODUCTS.

Dairying stands third in importance among the several branches of agriculture in Colorado. Of the 24,700 farmers in the state, 3,867, or 15.7 per cent, reported dairy products as their principal source of income. While the population has increased but 30.7 per cent since 1890, and the number of dairy cows but 30.1 per cent, the quantity of milk produced shows a gain of 18,759,320 gallons, or 95.3 per cent. The discrepancy between the increase of milk production and dairy cows, however, is probably apparent rather than real, since the definition of "dairy cows," adopted in the census of 1900, was more strict than in preceding censuses. As a result, many animals that would have been included in the class of "dairy cows," if the classification of 1890 had been followed,

were doubtless excluded, causing reduction in the percentage of increase for the decade.

Arapahoe county reported 6,435,955 gallons of milk, or more than twice the quantity produced in any other county. The average production per capita increased from 47.7 gallons in 1889, to 71.2 gallons in 1899. Since 1879 the quantity of milk sold has increased 12,665,104 gallons, or approximately 250 per cent.

Comparison with the figures for 1889 shows a gain of 1,650,396 pounds, or 50.3 per cent, in the amount of butter, and of 16,001 pounds, or 18.4 per cent, in the quantity of cheese made on farms.

Of the $8,778,901 given in Table 16 as the value of dairy produce in 1899, $1,355,858, or 35.9 per cent, represents the value of such produce consumed on farms, and $2,423,043, or 64.1 per cent, the amount realized from sales. Of the latter sum, $1,747,424 was derived from the sale of 18,170,810 gallons of milk; $589,394, from 2,756,798 pounds of butter; $76,531, from 132,297 gallons of cream; and $9,694, from 80,833 pounds of cheese.

POULTRY AND EGGS.

The total value of the products of the poultry industry in 1899 was $1,440,514, of which 59.2 per cent represents the value of eggs produced, and 40.8 per cent, that of fowls raised. Over three million dozens more eggs were produced in 1899 than in 1889, an increase of 112.4 per cent.

WOOL.

In the last decade the production of wool has increased 5,209,703 pounds, or 156.2 per cent. As the wool product given for 1890, however, did not include wool produced on ranges, the real increase was probably considerably less than that shown by simple comparison of the figures. The average weight of fleeces has remained practically the same, being 5.9 pounds in 1890 and 6.1 pounds in 1900. Las Animas county reported the largest quantity of wool, 820,644 pounds. Mohair and goat hair were reported by but few counties, Las Animas, Mesa, La Plata, and Saguache counties reporting over 80 per cent of the total clip.

HONEY AND WAX.

In 1900, 4,518 farmers reported, in the aggregate, 59,756 swarms of bees. They obtained, in 1899, 1,732,630 pounds of honey and 24,930 pounds of wax, the gains in the last decade being 87.4 per cent in the former item, and more than twofold in the latter. The leading counties in 1900, as in 1890, were Jefferson, Arapahoe, Montrose, Delta, Larimer, and Weld.

HORSES AND DAIRY COWS ON SPECIFIED CLASSES OF FARMS.

Table 17 presents, for the leading groups of farms, the number of farms reporting horses and dairy cows, the total number of these animals, and the average number per farm. In the computation of these averages, only those farms are included which report the kind of stock under consideration.

TABLE 17.—HORSES AND DAIRY COWS ON SPECIFIED CLASSES OF FARMS, JUNE 1, 1900.

CLASSES.	HORSES.			DAIRY COWS.		
	Farms reporting.	Number.	Average per farm.	Farms reporting.	Number.	Average per farm.
Total	23,020	236,546	10.3	18,669	100,116	5.4
White farmers	22,954	236,283	10.3	18,637	99,924	5.4
Colored farmers	66	263	4.0	32	192	6.0
Owners[1]	17,166	166,087	9.7	13,942	74,826	5.4
Managers	763	32,548	42.7	564	3,876	6.9
Cash tenants	2,000	14,066	7.0	1,667	11,064	6.6
Share tenants	3,091	23,895	7.7	2,496	10,350	4.1
Under 20 acres	2,360	11,496	4.9	1,723	7,331	4.3
20 to 99 acres	4,243	20,188	4.8	3,331	13,068	3.9
100 to 174 acres	8,596	67,867	7.9	6,809	32,185	4.7
175 to 259 acres	1,502	14,194	9.5	1,326	7,238	5.5
260 acres and over	6,319	122,801	19.4	5,480	40,344	7.4
Hay and grain	6,482	54,650	8.4	5,121	20,597	4.0
Vegetable	2,156	10,407	4.8	1,528	4,205	2.8
Fruit	583	2,148	3.7	415	792	1.9
Live stock	8,455	136,132	16.1	6,489	34,632	5.3
Dairy	3,661	22,920	6.3	3,867	34,851	9.0
Miscellaneous[2]	1,683	10,289	6.1	1,249	5,039	4.0

[1] Including "part owners" and "owners and tenants."
[2] Including florists' establishments and nurseries.

CROPS.

The following table gives the statistics of the principal crops grown in 1899.

TABLE 18.—ACREAGES, QUANTITIES, AND VALUES OF THE PRINCIPAL FARM CROPS IN 1899.

CROPS.	Acres.	Unit of measure.	Quantity.	Value.
Corn	85,256	Bushels	1,275,680	$508,488
Wheat	294,949	Bushels	5,587,770	2,809,370
Oats	120,952	Bushels	3,080,180	1,121,745
Barley	21,949	Bushels	531,240	246,510
Rye	2,148	Bushels	26,180	13,576
Buckwheat	27	Bushels	226	151
Flaxseed	434	Bushels	1,820	1,851
Clover seed	----------	Bushels	12,623	52,520
Grass seed	----------	Bushels	1,012	775
Hay and forage	952,214	Tons	1,647,477	8,159,279
Kafir corn	18	Bushels	302	131
Peanuts	5	Bushels	138	173
Dry beans	2,634	Bushels	28,570	49,169
Dry peas	3,621	Bushels	47,461	29,906
Broom corn	1,241	Pounds	226,550	10,577
Potatoes	44,075	Bushels	4,465,748	1,717,111
Sweet potatoes	20	Bushels	2,291	2,064
Onions	754	Bushels	205,841	125,713
Sugar beets	1,094	Bushels	6,656	26,771
Miscellaneous vegetables	14,742	----------	----------	1,006,287
Sorghum cane	51	Tons	20	11
Sorghum sirup	----------	Gallons	2,661	1,066
Small fruits	2,847	----------	----------	294,365
Grapes	[1] 436	Centals	5,863	[2] 17,174
Orchard fruits	[1] 43,523	Bushels	354,049	[3] 378,119
Nuts	----------	----------	----------	433
Forest products	----------	----------	----------	113,055
Flowers and plants	137	----------	----------	198,479
Seeds	495	----------	----------	11,113
Nursery stock	497	----------	----------	65,936
Miscellaneous	338	----------	----------	8,490
Total	1,593,962	----------	----------	16,970,568

[1] Estimated from number of vines or trees.
[2] Including value of raisins, wine, etc.
[3] Including value of cider and vinegar.

Of the total value of crops, hay and forage contributed 48.1 per cent; cereals, 27.7 per cent; vegetables, including potatoes, sweet potatoes, and onions, 16.9 per cent; fruits, 4.1 per cent; and all other crops, 3.2 per cent. Of the total acreage devoted to crops, that of hay and forage constituted 59.7 per cent; cereals, 33.0 per cent; vegetables, 3.8 per cent; fruits, 2.9 per cent; and other crops, 0.6 per cent.

The average values per acre of the principal crops were as follows: Flowers and plants, $1,448.75; onions, $166.73; nursery stock, $132.67; small fruits, $125.43; miscellaneous vegetables, $68.26; grapes, $39.39; potatoes, including sweet potatoes, $38.96; cereals, $8.95; orchard fruits, $8.69; and hay and forage, $8.57.

The crops yielding the highest returns per acre were grown upon highly improved land. Their production required a relatively great amount of labor and large expenditures for fertilizers.

CEREALS.

Table 19 shows the changes in cereal production since 1869.

TABLE 19.—ACREAGE AND PRODUCTION OF CEREALS: 1869 TO 1899.

PART 1.—ACREAGE.

YEAR.[1]	Barley.	Buckwheat.	Corn.	Oats.	Rye.	Wheat.
1899	21,949	27	85,256	120,952	2,148	294,949
1889	12,086	117	119,310	87,959	4,615	126,999
1879	4,112	8	22,991	28,023	1,294	64,693

[1] No statistics of acreage were secured prior to 1879.

PART 2.—BUSHELS PRODUCED.

1899	531,240	226	1,275,680	3,080,130	26,180	5,587,770
1889	331,556	2,081	1,511,907	2,514,480	54,153	2,845,439
1879	107,116	110	455,968	640,900	19,465	1,425,014
1869	95,141	178	231,903	332,940	5,235	258,474

The total area devoted to cereals in 1899 was 525,281 acres; in 1889, 351,086 acres; and in 1879, 116,121 acres. The acreage of each of the specified grains in 1899 shows a considerable increase over that reported twenty years before. In the last decade the total acreage in cereals has increased 49.6 per cent, the gains for wheat, barley, and oats being 132.2 per cent, 81.6 per cent, and 37.5 per cent, respectively, while the acreage devoted to corn shows a decrease of 28.5 per cent.

The acreages given in the above table are exclusive of 1,341 acres of corn, nonsaccharine sorghum, and similar crops grown for forage or ensilage, and of 46,530 acres of grain cut green for hay.

HAY AND FORAGE.

In 1900, 17,008 farmers, or 68.9 per cent of the total number, reported hay and forage crops. The average yield, exclusive of cornstalks, was 1.7 tons per acre. The total area in hay and forage in 1899 was 952,214 acres, an increase of 97.7 per cent over the acreage reported in 1889. In 1899 the acreages and yields of the various kinds of hay and forage were as follows: Wild, salt, and prairie grasses, 335,748 acres and 309,599 tons; millet and Hungarian grasses, 8,323 acres and 9,370 tons; alfalfa or lucern, 455,287 acres and 1,107,511 tons; clover, 2,582 acres and 5,410 tons; other tame and cultivated grasses, 80,566 acres and 113,392 tons; grains cut green for hay, 46,530 acres and 55,277 tons; crops grown for forage, 23,228 acres and 42,928 tons; and cornstalks, 5,741 acres and 3,990 tons.

In Table 18 the production of cornstalks is included, but not the acreage, as the forage secured was only an incidental product of the land on which it was raised.

ORCHARD FRUITS.

The changes in orchard fruits since 1890 are shown in the following table.

TABLE 20.—ORCHARD TREES AND FRUITS: 1890 AND 1900.

FRUITS.	NUMBER OF TREES.		BUSHELS OF FRUIT.	
	1900.	1890.	1899.	1889.
Apples	2,004,895	77,798	257,563	70,728
Apricots	14,854	1,512	2,363	284
Cherries	127,001	4,085	5,387	345
Peaches	319,998	8,204	47,381	3,135
Pears	168,837	3,752	19,272	2,441
Plums and prunes	259,332	10,645	15,224	1,675

Only 2,162, or 8.8 per cent, of the farmers in the state reported orchard fruits in 1899. In the census of 1890, the value of orchard products was not separately reported but in 1879 it was $3,246. For 1899 the value was $378,119, a hundredfold gain in twenty years. The three counties of Mesa, Fremont, and Delta produced over one-half the fruit crop of the state. The total number of trees shown in the above table is 2,894,917, of which 69.3 per cent are apple trees; 11.0 per cent, peach trees; 9.0 per cent, plum and prune trees; 5.8 per cent, pear trees; 4.4 per cent, cherry trees; and 0.5 per cent, apricot trees. Since 1890, there have been very marked gains in the number of all trees, the fruit-raising industry practically dating its origin from that year.

SMALL FRUITS.

The total area used in the cultivation of small fruits in 1899 was 2,347 acres, distributed among 1,778 farms. The value of the fruits grown was $294,385, an average of $125 per acre. Of the total area, 1,067 acres, or 45.5 per cent, were devoted to strawberries, the total production of which was 2,224,240 quarts. The acreage and production of other berries were as follows: Raspberries and Logan berries, 689 acres and 817,450 quarts; currants, 226 acres and 204,480 quarts; blackberries and dewberries, 195 acres and 216,020 quarts; gooseberries, 122 acres and 133,750 quarts; and other berries, 48 acres and 53,290 quarts.

VEGETABLES.

The value of all vegetables grown in the state in 1899, including potatoes, sweet potatoes, onions, and sugar beets, was $2,877,836. Of this amount, 59.7 per cent represents the value of potatoes, which were reported by more than one-fourth of the farmers of the state. Weld county led in the production of potatoes, reporting 2,821,285 bushels, valued at $1,013,325, or 59.0 per cent of the value of the entire crop.

In the growing of miscellaneous vegetables, 14,742 acres were used. The products of 4,957 acres were not reported in detail, but of the remaining 9,785 acres, 2,329 were devoted to muskmelons; 1,761, to cabbages; 1,316,

to green peas; 1,253, to tomatoes; 1,095, to sweet corn; 670, to watermelons; and 1,361, to other vegetables.

SUGAR BEETS.

The production of sugar beets bids fair to become an important branch of agriculture in this state. In 1899, 169 farmers devoted to this crop an area of 1,094 acres, or an average of 6.5 acres per farm, and obtained therefrom 6,650 tons of beets, an average of 6.1 tons per acre. The amount realized from the crop was $26,711, an average of $158 per farm, $24 per acre, and $4 per ton. Of the total acreage devoted to the crop, 85.3 per cent was reported by Mesa county.

FLORICULTURE.

The proprietors of 53 of the 72 establishments where flowers were grown for market in 1899 made commercial floriculture their principal business. They had a capital of $686,270, of which $461,375 represents the value of buildings; $208,475, that of land; $14,745, that of implements; and $1,675, that of live stock. In 1899 they raised flowers and plants valued at $183,303 and obtained other products valued at $15,100, making a total gross income of $198,403, or $1,296.75 for each of the 153 acres used. During the same year they expended $1,270 for fertilizers and $56,132 for labor. The 27 florists of Arapahoe county reported 71.5 per cent of the total product.

An aggregate of 359,700 square feet of land under glass was reported by the operators of 225 farms and florists' establishments. The greenhouses of the 53 florists had 698,682 square feet of glass surface, covering 524,012 square feet of land.

NURSERIES.

Nursery products were grown in 1899 by the operators of 41 farms, but of this number only 21 derived their principal income from this class of products. From 705 acres of land these 21 nurserymen secured products valued at $51,273, an average income per acre of $67.02. Of the total receipts, $45,288 was derived from the sale of trees, shrubs, and vines, and the balance from other farm products.

LABOR AND FERTILIZERS.

The total expenditure for labor on farms in 1899, including the value of board furnished, was $4,100,905, an average of $166 per farm. The average was highest on the most intensively cultivated farms, being $1,059 for florists' establishments, $415 for nurseries, $227 for fruit farms, $226 for live-stock farms, $157 for vegetable farms, $153 for hay and grain farms, $87 for dairy farms, and $62 for sugar farms. "Managers" expended on an average, $939; "share tenants," $137; "cash tenants," $118; and "owners," $113. White farmers expended $166 per farm, and colored farmers, $22.

Fertilizers purchased in 1899 cost $23,225, an average of less than $1 per farm, and a decrease since 1890 of 7.4 per cent. For florists' establishments the average expenditure was $24; for vegetable and fruit farms, $3; and for hay and grain farms, dairy farms, and nurseries, $1.

SOUTHERN UTE INDIAN RESERVATION.

The Southern Ute reservation, containing 870 square miles, is situated in the southwestern corner of Colorado, a small portion extending into New Mexico. On this reservation are located the Moache, Capote, and Wiminuche Ute, of Shoshonean stock. These bands are commonly known as the Southern Ute Indians.

The arable land, constituting about one-fifth of the total area, is confined to the river valleys. No part of the reservation is cultivable without irrigation, but the soil is everywhere fertile, and wherever water can be supplied, cereals, grasses, fruits, and vegetables may be successfully grown.

The eastern part of the reservation, on which the Moache and Capote bands reside, is well supplied with irrigation facilities. There are now in operation 4 large canals, aggregating 24.8 miles in length, and also many smaller ditches. The work is gradually being extended and new land is constantly being reclaimed. The unallotted western portion is without irrigation, although the land is as fertile as any in the eastern section. Congress has appropriated $150,000 for an irrigation system in this part of the reservation, but as yet the work of construction has not been begun.

Naturally adverse to manual labor, the Colorado Indians have been slow to adopt agriculture as a means of subsistence. The allotted Ute (Moache and Capote) are making steady advancement, and when their irrigation systems are fully developed they will doubtless become self-supporting. They are rapidly improving their allotments, constructing new roads and irrigation ditches, in addition to building fences, barns, and log houses. In some instances these improvements have been accomplished without the assistance of white men. Although most of the Indian farmers have from ten to twenty acres under cultivation, government rations still constitute 25 per cent of their subsistence.

The principal crops of the Southern Ute are wheat and alfalfa. In 1899, 14 farmers sowed 120 acres to wheat, and obtained a yield of 2,400 bushels, valued at $1,440. Their alfalfa yields two and three cuttings each season. From 102 acres sown to alfalfa in the census year they cut 409 tons, valued at $1,227. They find a ready market at good prices for everything they raise.

Their live stock, June 1, 1900, consisted of 48 horses, 22 neat cattle, and 30 goats. Their horses and sheep range all winter without shelter and without being fed, and it is estimated that 400 sheep and 100 horses perished during the severe winter of 1898–1899. Their horses are mostly pony stock of little value. The small number of animals reported in 1900 is due to the fact that the Wiminuche, who own most of the live stock, had left the reservation with their flocks and herds and no report of their animals could be obtained.

IRRIGATION STATISTICS.

During the decade 1889 to 1899, Colorado advanced to the front rank of irrigated states, surpassing California in the extent of land under irrigation, but remaining second in the number of irrigators and in the value of irrigated crops. The colder climate and greater altitude of Colorado make it impossible to raise the high-priced citrus or semitropical fruits, or to practice the degree of intensive farming for which Arizona and California are noted.

The surface of the state is divided about equally into mountain area and plains, the latter lying to the east, and being a continuation of the Kansas uplands. Among the mountains of the western half of the state are open valleys, surrounded by lofty ranges. In the southwest, the mountains are particularly abrupt, presenting jagged and rocky peaks, Alpine in their characteristics. At an elevation of 7,000 or 8,000 feet, surrounded by mountains rising 8,000 feet higher, are found a number of green parks which are widely different in aspect from the lower plains of the east, or the vast plateaus or table-lands of the middle west. Most of these parks, once the basins of lakes, have floors which are apparently level but which have sufficient fall to be easily irrigable.

The plains, which comprise an area of 30,000 square miles, are barren of timber, and have a gradual slope toward the Mississippi Valley. About two-thirds of the people of Colorado live in this area. The soil is rich and the vegetation is particularly luxuriant along the water courses. The rainfall is insufficient, however, and crops can not be produced without irrigation.

The land surface of Colorado comprises 66,332,800 acres, of which only 9,474,588, or 14.3 per cent, were included in farms in 1900, and 2,273,968 acres, or 3.4 per cent were improved. Of this area, 2,240 acres are included in the Indian reservations. Of the total area in farms, 24.0 per cent is improved.

The importance of irrigation as a feature of the agricultural development of the state is shown by the fact that the irrigated land outside of the Indian reservations amounts to 1,611,271 acres, or 70.9 per cent of the improved farm land. In 1890 the acres irrigated outside of the Indian reservations numbered 890,735, or 48.8 per cent of the improved land. Since then, by the opening of new ditches and canals, by the enlargement of those previously constructed, and by the application of more intelligent methods of water distribution, 720,536 acres of land have been added to the irrigated area of the territory, an increase of 80.9 per cent. In 1890 most of this land was public domain and comparatively valueless. At the present time its value, at a low estimate, is $28,968,552, an average of $40.77 per acre. Irrigation has added this large amount to the farm wealth of the state. The relation of irrigation to the various agricultural operations is shown in the following table.

TABLE A.—ACREAGE AND PRODUCTION OF ALL CROPS, AND OF IRRIGATED CROPS IN 1899.

CROPS.	ACREAGE.			Unit of measure.	PRODUCTION.		
	Total.	Irrigated.	Per cent irrigated.		Total.	Irrigated.	Per cent irrigated.
Corn	85,256	40,905	48.0	Bushels	1,275,680	871,560	68.3
Wheat	294,949	247,644	84.0	Bushels	5,587,770	5,309,350	95.0
Oats	120,952	100,515	83.1	Bushels	3,080,180	2,763,340	89.7
Barley	21,949	20,304	92.5	Bushels	581,240	509,960	96.0
Rye	2,148	888	41.3	Bushels	26,180	15,060	57.5
Alfalfa	455,237	452,433	99.4	Tons	1,107,471	1,100,706	99.4
Grain cut green for hay	46,630	19,277	41.4	Tons	55,277	29,940	54.2
Other hay	450,447	320,509	71.1	Tons	485,119	370,361	76.4
Broom corn	1,241	45	3.6	Pounds	226,550	17,000	7.5
Dry beans	2,634	2,359	84.6	Bushels	28,570	26,747	93.6
Dry pease	3,621	3,523	97.3	Bushels	47,461	46,704	98.4
Potatoes	44,075	36,344	82.5	Bushels	4,465,748	4,118,737	92.2
Sweet potatoes	20	19	95.0	Bushels	2,291	2,258	98.6
Onions	754	677	89.8	Bushels	205,841	188,169	91.4
Miscellaneous vegetables	14,742	11,667	79.1				
Small fruits	2,347	1,749	74.5				
Grapes	436	408	93.6	Centals	5,713	4,921	86.1
Orchard fruits	43,528	38,957	89.4				
Other crops	3,096	2,617	84.5				
Total	1,593,962	1,300,840	81.6				

The total number of acres of irrigated crops, as given above, is 1,300,840, while the total number of acres of land irrigated is 1,611,271. The difference of 310,431 acres represents in part the area of pasture lands irrigated, but includes also a considerable acreage, which, by reason of shortage of water, was only partially irrigated and did not produce crops. On the other hand, it is probable that a portion of the area upon which crops were reported as grown without irrigation, was really irrigated at some time during the year.

Table B is a comparative exhibit, by counties, of the number of irrigators, and the acreage irrigated in 1889 and in 1899. Table C presents the corresponding figures for the six drainage divisions of the state.

TABLE B.—NUMBER OF IRRIGATORS, AND ACRES IRRIGATED, WITH PERCENTAGES OF INCREASE, BY COUNTIES: 1889 AND 1899.

COUNTIES.	NUMBER OF IRRIGATORS.			ACRES IRRIGATED.		
	1899.	1889.	Per cent of increase.	1899.	1889.	Per cent of increase.
The State	17,613	9,659	82.3	1,611,271	890,735	80.9
Arapahoe	1,153	520	121.7	81,807	35,619	129.7
Archuleta	151	45	235.6	6,529	3,084	111.7
Baca	10	2	400.0	156	60	160.0
Bent	223	83	168.7	33,039	4,221	682.7
Boulder	887	449	97.6	83,766	70,962	18.0
Chaffee	191	143	29.1	18,071	11,994	9.0
Cheyenne	14			291		
Clear Creek	9	12	[1]25.0	368	352	4.5
Conejos	603	387	55.8	98,486	46,273	112.8
Costilla	315	196	60.7	50,290	25,918	94.0
Custer	155	221	[1]29.9	11,183	20,997	[1]47.0
Delta	798	312	155.8	35,219	17,846	97.4
Dolores	23	12	91.7	855	216	295.8
Douglas	134	96	39.6	7,962	5,699	39.7
Eagle	183	176	6.8	18,486	14,250	29.7
Elbert	17	32	[1]46.9	905	2,616	[1]66.0
El Paso	180	139	29.5	13,131	10,959	19.8
Fremont	588	312	88.5	15,542	13,508	15.1
Garfield	487	314	55.1	24,937	14,637	70.4
Gilpin	16			354		
Grand	153	98	56.1	17,648	10,281	71.6
Gunnison	226	165	37.0	26,971	20,115	34.1
Hinsdale	80	19	57.9	1,339	1,389	[1]4.0
Huerfano	345	400	[1]13.8	15,329	22,294	[1]31.0
Jefferson	751	470	59.8	43,850	40,829	7.4
Kiowa	3			158		
Kit Carson	23			859		
Lake	56	36	55.6	7,380	6,591	12.0
La Plata	220	230	[1]4.3	10,771	11,785	[1]9.0
Larimer	1,256	769	63.3	169,028	103,483	63.3
Las Animas	549	353	55.5	24,661	22,891	7.7
Lincoln	17	5	240.0	1,678	334	402.4
Logan	226	73	209.6	8,913	8,970	[1]1.0
Mesa	742	310	139.4	33,223	13,798	140.8
Mineral	32			2,640		
Montezuma	240	29	727.6	12,246	2,122	477.1
Montrose	468	462	1.3	34,132	27,361	24.7
Morgan	305	97	214.4	37,012	16,443	125.1
Otero	762	189	448.2	62,268	16,431	279.0
Ouray	128	94	36.2	10,440	7,894	32.3
Park	172	136	26.5	39,861	24,015	66.0
Phillips	4			19		
Pitkin	153	115	33.0	12,088	7,041	71.7
Prowers	377	18	1,994.4	46,092	1,808	2,449.3
Pueblo	561	206	172.3	85,943	10,930	228.8
Rio Blanco	239	135	77.0	21,381	7,532	183.9
Rio Grande	351	195	80.0	71,325	21,797	227.2
Routt	552	280	97.1	44,542	16,328	172.9
Saguache	364	240	51.7	75,909	52,453	44.7
San Juan	3			9		
San Miguel	108	57	89.5	5,425	2,125	155.3
Sedgwick	81			4,779		
Summit	72	20	260.0	3,531	1,316	168.3
Teller	41			881		
Washington	25	1	2,400.0	5,099	720	608.2
Weld	1,814	1,046	73.4	226,613	112,080	102.2
Yuma	22	5	340.0	856	373	129.5

[1] Decrease.

TABLE C.—NUMBER OF IRRIGATORS, AND ACRES IRRIGATED, WITH PERCENTAGES OF INCREASE, BY WATER DIVISIONS: 1889 AND 1899.

WATER DIVISIONS.	NUMBER OF IRRIGATORS.			ACRES IRRIGATED.		
	1899.	1889.	Per cent of increase.	1899.	1889.	Per cent of increase.
The State	17,613	9,659	82.3	1,611,271	890,735	80.9
I	6,872	3,706	85.4	711,192	422,161	68.5
II	4,095	2,062	98.6	281,662	143,018	96.9
III	1,695	1,037	63.5	299,989	147,830	102.9
IV	614	304	102.0	29,555	16,991	73.9
V	3,546	2,135	66.1	222,950	136,880	62.9
VI	791	415	90.6	65,923	23,855	176.3

While the number of farms outside of the Indian reservations increased, in ten years, 50.7 per cent, the number of irrigators, as shown in the above tables, increased 82.3 per cent, and the irrigated area 80.9 per cent.

Table D is an exhibit, by counties, exclusive of Indian reservations, of the number of irrigated farms compared with the total number of farms, and of the irrigated acreage compared with the total improved acreage.

TABLE D.—COMPARISON OF IRRIGATED FARMS WITH TOTAL NUMBER OF FARMS, AND OF IRRIGATED ACREAGE WITH IMPROVED ACREAGE, JUNE 1, 1900.

COUNTIES.	NUMBER OF FARMS.			NUMBER OF IMPROVED ACRES IN FARMS.		
	Total.	Irrigated.	Per cent irrigated.	Total.	Irrigated.	Per cent irrigated.
The State	24,686	17,613	71.3	2,273,731	1,611,271	70.9
Arapahoe	2,105	1,153	54.8	202,047	81,807	40.5
Archuleta	227	151	66.5	10,372	6,529	62.9
Baca	137	10	7.3	7,832	156	2.0
Bent	274	223	81.4	38,858	33,039	85.0
Boulder	967	887	91.7	91,708	83,766	91.3
Chaffee	242	191	78.9	14,726	18,071	88.8
Cheyenne	57	14	24.6	2,740	291	10.6
Clear Creek	31	9	29.0	1,196	368	30.8
Conejos	617	603	97.7	98,960	98,486	99.5
Costilla	331	315	95.2	79,678	50,290	63.1
Custer	351	155	44.2	23,111	11,183	48.4
Delta	874	798	91.3	38,016	35,219	92.6
Dolores	36	23	63.9	942	855	90.8
Douglas	457	134	29.3	39,165	7,962	20.3
Eagle	208	188	90.4	19,709	18,486	93.8
Elbert	579	17	2.9	40,460	905	2.2
El Paso	729	180	24.7	62,408	13,131	21.0
Fremont	606	588	97.0	20,512	15,542	75.8
Garfield	507	487	96.1	29,002	24,937	86.0
Gilpin	49	16	32.7	2,110	354	16.8
Grand	179	153	85.5	18,504	17,648	95.3
Gunnison	239	226	94.6	28,163	26,971	95.8
Hinsdale	35	30	85.7	1,767	1,339	75.8
Huerfano	486	345	70.9	25,466	15,329	60.2
Jefferson	1,050	751	71.5	61,224	43,850	71.6
Kiowa	138	3	2.2	4,138	158	3.8
Kit Carson	305	23	7.5	19,581	859	4.4
Lake	71	56	78.9	7,686	7,380	96.6
La Plata	285	220	77.2	14,491	10,771	74.3
Larimer	1,412	1,256	89.0	180,353	169,028	93.7
Las Animas	1,037	549	52.9	38,441	24,661	64.2
Lincoln	138	17	12.3	8,195	1,678	20.5
Logan	413	226	54.7	57,639	8,913	15.5
Mesa	747	742	99.3	34,205	33,223	97.1
Mineral	48	32	66.7	2,929	2,640	90.1
Montezuma	261	240	92.0	15,204	12,246	80.5
Montrose	524	468	89.3	36,884	34,132	92.5
Morgan	378	305	80.7	43,282	37,012	85.5
Otero	814	762	93.6	68,036	62,268	91.5
Ouray	128	128	100.0	11,184	10,440	93.3
Park	220	172	78.2	40,258	39,861	99.0
Phillips	244	4	1.6	20,028	19	0.1
Pitkin	170	153	90.0	12,583	12,088	96.1
Prowers	478	377	78.9	58,172	46,092	79.2
Pueblo	668	561	84.6	40,821	35,943	88.1
Rio Blanco	264	239	90.5	21,846	21,381	97.9
Rio Grande	361	351	97.2	78,141	71,325	91.3
Routt	708	552	78.5	53,977	44,542	82.5
Saguache	406	364	89.6	119,587	75,909	63.5
San Juan	6	3	50.0	18	9	50.0
San Miguel	229	108	47.2	10,088	5,425	53.8
Sedgwick	156	81	51.9	9,209	4,779	51.9
Summit	77	72	93.4	4,031	3,531	87.6
Teller	148	41	28.7	4,686	881	18.8
Washington	201	25	12.4	17,961	5,099	28.4
Weld	2,002	1,814	90.6	251,307	226,613	90.2
Yuma	291	22	7.6	30,145	856	2.8

Of the 24,686 farms of the state, 17,613, or 71.3 per cent, are irrigated; and of the total number of acres in farms, 6,241,850, or 65.9 per cent, are in irrigated farms.

Of the improved land in farms, 70.9 per cent is irrigated. The average size of all farms, exclusive of those held by the Indians, is 384 acres, and the average size of irrigated farms is 354 acres. The average number of acres of improved land in all farms is 92, and in irrigated farms it is 107, of which 91 acres are actually irrigated.

Most of the water used for irrigation is surface water obtained from rivers, but in addition to this, considerable quantities of ground water, or so-called underflow, found at depths varying from 20 to 1,500 feet, have been utilized. There were 227 farms which were irrigated wholly, or in part, by pumping this underflow from wells.

Table E shows the number of ditches operated in 1899, with length and cost of construction and of maintenance, by water divisions.

TABLE E.—NUMBER OF MAIN CANALS AND DITCHES OPERATED IN 1899, WITH LENGTH IN MILES AND COST OF CONSTRUCTION, AND OF MAINTENANCE, BY DRAINAGE DIVISIONS.

WATER DIVISIONS.	MAIN CANALS AND DITCHES.					
	Number.	Length in miles.	Average number of acres irrigated per mile.	Cost of construction.		Cost of maintenance per acre irrigated in 1899.
				Total.	Per acre irrigated in 1899.	
The State	1,890	7,374	218	$11,568,137	$7.21	$0.34
I	380	2,292	310	4,131,874	5.82	0.43
II	438	1,574	179	3,316,414	11.80	0.37
III	142	758	396	1,743,369	5.89	0.13
IV	99	240	123	93,095	3.15	0.30
V	544	1,828	122	2,076,718	9.34	0.32
VI	287	687	96	206,667	3.16	0.17

The statistics presented in Table E relate only to the canals and ditches outside of the Indian reservations. The number of acres of irrigated land for each mile of ditch operated averages 218, or slightly less than double that for Arizona. The number of acres under ditch for each mile is 390, or nearly twice the area irrigated. In other words, the area rendered cultivable by irrigation would be nearly doubled if the ditches already constructed were furnished with a sufficient and properly administered water supply.

In 1899, however, the water supply in many parts of Colorado was exceptionally deficient, and in years of average precipitation the area irrigated is undoubtedly much larger.

The average cost of constructing the ditches was about $1,575 per mile, a little more than half the cost of construction in Arizona. The average construction cost, per acre of land under ditch, was $3.60, and per acre of land actually irrigated in 1899, $7.21. The average cost of maintenance per acre irrigated in 1899 was $0.34, but estimating the cost of water right upon the basis of the area irrigated in a year of short water supply, necessarily made the average cost higher than it would be in an ordinary year.

No estimates having been secured in 1889 of the cost per mile of ditches, no comparisons can be presented. In 1899 the average value of arable land under ditch, but not yet prepared for irrigation, varied from $2 to $20 per acre, while that of irrigated land is from $24 to $1,000. The difference represents the increment to the value of the land by irrigation and the improvements thereby made possible. This shows a large profit on the cost of ditch construction.

There were, in 1889, 7,055 acres irrigated from wells. The total cost of construction of the irrigation systems obtaining water from wells, was $190,566. The value of all land in irrigated farms, not including buildings, is $79,696,998, and in unirrigated farms, $10,640,465. The value of all buildings on irrigated farms is $13,178,702, and on unirrigated, $2,822,700. The land in irrigated farms, then, represents 88.2 per cent of the total value of all farm lands, although constituting but 65.8 per cent of the total acreage. The value of buildings on these farms is 82.4 per cent of the total for all farms, and the value of implements and machinery, 83.1 per cent. The irrigation systems in the state, as reported in 1899, represent a cost of $11,613,732. The value of the irrigated products grown in 1899 was $15,633,938. The irrigated area in crops, as shown in Table A, is 1,300,840 acres; the income from this land in 1899 was, therefore, slightly more than $12 per acre.

Exclusive of the Indian reservations, the average value of land, exclusive of buildings, is, for all farms, $9.54 per acre; for unirrigated farms, $3.29; and for irrigated farms, $12.77. The average value per acre of irrigated land is $40.77, while that for the best irrigated land, suitable for growing alfalfa, ranges from $50 to $150, and irrigated fruit land has, in some instances, a reported value as high as $1,000 per acre.

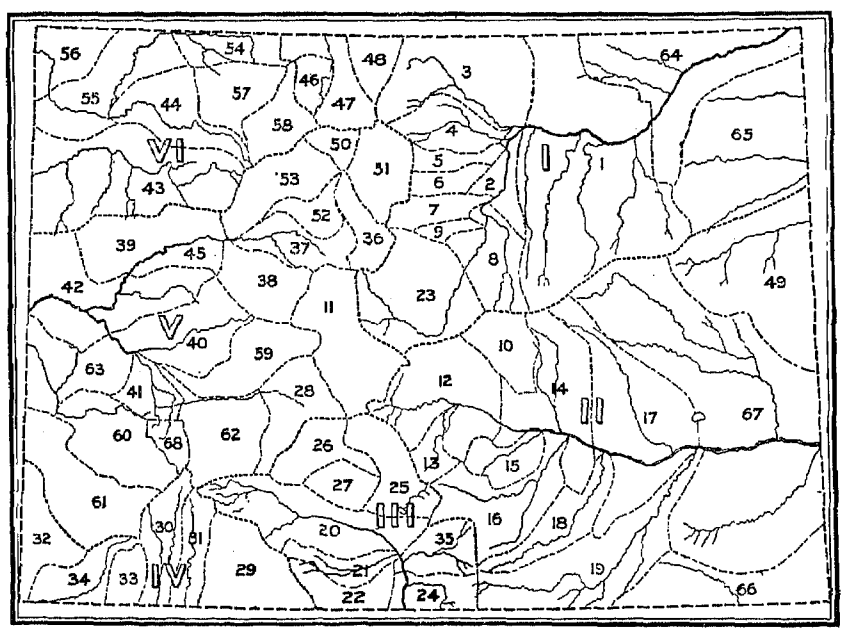
Table F presents, by counties, the average values per acre of irrigated and unirrigated farms, and of irrigated and unirrigated land under ditch.

TABLE F.—AVERAGE VALUE PER ACRE OF IRRIGATED AND UNIRRIGATED FARMS AND FARM LAND IN 1900.

COUNTIES.	AVERAGE VALUE PER ACRE.				
	Farms, exclusive of buildings.			Land under ditch.	
	All.	Irrigated.	Unirrigated.	Irrigated.	Unirrigated.
Arapahoe	$13.16	$24.03	$3.88	$65.63	$4.16
Archuleta	0.72	7.39	4.10	28.53	3.19
Baca	1.33	1.69	1.68	15.20	1.57
Bent	9.60	11.20	3.93	20.56	4.26
Boulder	22.67	24.41	5.02	62.46	5.88
Chaffee	9.76	10.39	2.97	29.24	1.90
Cheyenne	1.22	6.20	0.94	19.03	1.63
Clear Creek	6.76	8.68	4.32	17.67	2.13
Conejos	3.67	8.81	2.51	15.86	2.25
Costilla	2.64	2.66	1.11	12.87	1.94
Custer	8.83	11.59	5.50	34.81	4.88
Delta	28.47	29.45	9.96	47.27	10.67
Dolores	6.54	6.54		11.67	1.39
Douglas	6.57	7.81	5.52	96.11	3.55
Eagle	15.51	15.96	5.49	38.26	2.93
Elbert	3.34	3.45	3.31	32.58	5.79
El Paso	4.17	4.58	3.80	68.16	2.74
Fremont	27.76	29.91	3.04	343.96	20.28
Garfield	18.48	18.98	5.69	60.67	2.68
Gilpin	4.22	5.28	3.54	17.88	4.67
Grand	7.55	8.07	2.60	13.64	1.57
Gunnison	10.98	12.09	3.15	19.07	3.55
Hinsdale	7.86	7.98	4.16	15.07	1.45
Huerfano	5.02	5.70	2.83	27.69	1.89
Jefferson	26.66	38.02	10.03	91.22	4.92
Kiowa	1.59	4.67	1.56	15.76	1.54
Kit Carson	1.75	3.21	1.53	21.01	1.55
Lake	21.31	22.81	6.70	31.20	7.70
La Plata	10.45	11.99	2.02	39.94	2.50
Larimer	$10.74	$11.29	$4.57	$46.94	$2.03
Las Animas	3.71	6.42	2.15	17.24	1.59
Lincoln	1.65	1.74	1.59	12.73	1.47
Logan	7.24	9.88	1.00	24.09	1.91
Mesa	34.02	34.10	4.00	69.22	1.47
Mineral	4.20	4.62	1.80	9.77	1.74
Montezuma	9.46	9.55	3.74	11.08	1.93
Montrose	18.18	19.58	3.37	27.94	5.64
Morgan	10.95	13.10	2.35	28.01	2.89
Otero	14.56	17.46	1.45	43.55	2.92
Ouray	14.43	14.43		42.77	2.79
Park	5.92	6.14	3.05	14.47	1.79
Phillips	3.14	5.30	3.06	16.34	1.64
Pitkin	16.57	17.29	4.58	42.15	1.57
Prowers	11.83	17.81	2.87	39.18	1.68
Pueblo	7.33	7.85	2.65	61.72	3.21
Rio Blanco	12.98	13.38	3.34	39.51	1.87
Rio Grande	10.01	15.54	1.13	19.27	2.46
Routt	8.70	9.53	3.99	28.40	3.23
Saguache	6.49	6.69	1.24	15.52	2.09
San Juan	18.64	23.57	10.00	27.09	3.47
San Miguel	9.71	12.64	6.58	34.83	5.06
Sedgwick	5.74	7.90	2.93	16.32	1.38
Summit	11.24	11.74	2.41	21.03	1.41
Teller	6.86	8.34	6.42	29.05	3.23
Washington	2.54	9.52	1.23	24.64	1.76
Weld	16.76	23.54	2.52	39.14	3.44
Yuma	3.51	6.53	3.03	18.06	1.67

IRRIGATION BY DRAINAGE DIVISIONS.

The principal rivers of the state are the South Platte, Arkansas, Rio Grande, San Juan, Grand, and Green. The three last mentioned are tributaries of the Colorado of the West. The state has been divided by law into six large drainage divisions, corresponding with the natural hydrographic basins of the above named six principal rivers. For administrative purposes, these divisions are subdivided into water districts, the relative locations of which are shown on the accompanying map.



MAP OF WATER DIVISIONS.

THE SOUTH PLATTE RIVER.

The most important drainage basin in Colorado is that of the South Platte River, which includes the following counties: Arapahoe, Boulder, Douglas, Elbert, Jefferson, Larimer, Logan, Morgan, Park, Phillips, Sedgwick, Washington, Weld, and Yuma. The headwaters of the South Platte are in South Park in Park county. In the mountains the stream has a considerable fall, which gradually

diminishes as it enters the plains. Like most streams in this region, it is subject to great fluctuations in volume. During the spring floods its channel is nearly a mile wide, and the discharge is very great, while at other seasons, it sinks into its sandy bed and becomes almost dry. The area comprised in the drainage basin of this stream and its branches is 90,011 square miles.

On no river in the United States has irrigation been more largely developed or extended to a larger area than on the South Platte and its tributaries. Embraced in its drainage system are many populous cities and towns, and the richest farming communities in the state. The area under ditches and canals diverting water from the main Platte and its tributaries in Colorado, Wyoming, and Nebraska, is approximately 2,000,000 acres. In Colorado the area irrigated in 1899 was 711,192 acres, an increase since 1889 of 68.4 per cent. In this section are 38.9 per cent of the total number of irrigated farms, 44.1 per cent of the total irrigated area, and 43.4 per cent of the total population of the state. The total value of the farm land and buildings is 51.5 per cent of that of the whole state.

The first large irrigation enterprise of the state was founded at Greeley on this stream. The summer flow has been increased by the diversion of some of the headwaters of the western side of the range, and also by the building of reservoirs, both in the mountains and out on the plains. The great problem before the irrigators in this division is that of water storage and conservation of the floods which run to waste. There is already under ditch more land than can be supplied during times of drouth, but if the present supply of water were used with greater skill and economy, much larger areas could be cultivated. The acreage of fertile land to which water could be carried by canals and ditches already constructed can not be definitely ascertained, but unquestionably it far exceeds the area actually watered. The system of water storage is, however, being eagerly adopted by irrigators and others interested in such matters, as a relief from the trials and uncertainties of the chance supply. Reservoirs are being built by individuals and corporations. Some of these are among the high mountains, but the greater number are near the foothills in the vicinity of the land to be irrigated. The largest and best reservoir sites, however, have not been taken, their very magnitude and importance necessitating some form of public action in which other states may be concerned. The most completely developed of the reservoir systems is probably that on the Cache la Poudre River, a tributary of the South Platte. Among the important canals are Cache la Poudre; Larimer county; Larimer County Canal No. 2; Larimer and Weld Canal; Pleasant Valley and Lake Canal; and the Mercer Ditch. The combined length of these canals is more than 220 miles, and the area irrigated by them in 1899 was approximately 100,000 acres.

Water is held in the layers of sand and gravel which have been deposited at various depths beneath the surface of the plains. Investigations indicate that this supply is large, and that considerable areas of valuable land, located at too great an elevation to be irrigated by gravity diversion of water, will ultimately be reclaimed by utilizing the underflow.

THE ARKANSAS RIVER.

The Arkansas River rises in the vicinity of Leadville, in central Colorado, at an altitude of 10,000 feet, and receives some of its waters from the region of perpetual snow. It first flows south, through mountains covered with valuable forests, then east to Canyon, where it leaves the mountains. Within the mountains the slope is extremely steep, averaging 40 feet to the mile, but the fall gradually diminishes after the river enters the plains, where, for a distance of 500 miles, it averages 7 feet per mile. The drainage basin of the Arkansas contains 185,671 square miles, and its total length is 1,497 miles.

At the point where the Arkansas River enters the Great Plains of eastern Colorado its waters are largely drawn upon for irrigation, even the floods being stored and used; as a result, very little water flows into Kansas except when the stream is highest. In many respects the river has the same characteristic features as the South Platte. The tributaries are of two classes—those from the mountains, having a perennial flow, and those which drain the Great Plains and receive water only in time of rain or in the early spring. The largest of these mountain tributaries are Lake, Badger, and Grape creeks. Fountain Creek and St. Charles, Huerfano, Purgatoire, and Apishapa rivers receive their supply from the plains, as well as from the mountains. The Huerfano, Apishapa, and Purgatoire rivers come from the south, where they rise in the Sangre de Cristo Range. In their upper courses they carry considerable water, especially in the spring, but as the major portion of the supply is taken for irrigation, they contribute little or no water to the Arkansas during the irrigation season. These streams are subject to sudden rises during storms or local cloud-bursts, and at such times discharge great volumes of water into the main stream, much damage often resulting. Among the tributaries of the second class, which drain the plains, are such streams as Horse, Adobe, Big Sandy, and Timpas creeks, and many others of lesser note. The volume of water received by these streams is at times enormous, but for the greater portion of the year their channels are dry. During the flood season their flow has been estimated to be 10,000 cubic feet per second.

The average size of the farms in the upper Arkansas Valley is very small, the majority of them ranging from five to twenty acres. As a natural consequence, the average value per acre is the highest in the state. Where the valley broadens, the canals become more extensive and important, and the farms increase in size. Vast fields of alfalfa stretch for miles along the big ditches, producing winter forage and affording late fall pasturage for herds of cattle and sheep that graze on the free range in the spring and summer. The acreage in wheat, oats, and corn is large and the yields are uniformly good. This valley is especially adapted to the raising of sugar beets, and the industry is a growing one.

During a great part of the irrigation season the entire flow of the Arkansas River is exhausted by the canals and ditches in Colorado and the supply is insufficient for the land under ditch. The deficiency occurs when the water is most needed, and in many districts a shortage of crops is reported each year. The further development of irrigation is impracticable without recourse to artificial storage. Opportunities for this are afforded in the mountainous region of this basin and a number of excellent reservoir sites have been found and reported. The system of reservoirs constructed by the Great Plains Water Company, near Lamar, has proved very beneficial in preventing loss of crops.

THE RIO GRANDE DRAINAGE BASIN.

The Rio Grande, rising in the San Juan Range, drains the mountain area to the south and east of the Continental Divide in the southwestern part of the state. Its total drainage area in Colorado is 7,527 square miles. For 80 miles of its course it flows easterly as a mountain stream, until it enters the San Luis Valley, a fertile, level plain, having an area about equal to that of Connecticut, and lying between ranges of the Rocky Mountains. This valley has a general elevation of 7,500 feet, the mountains surrounding it rising from 4,000 to 6,000 feet higher. The Rio Grande cuts through it diagonally from northwest to southeast, and receives from the adjacent mountains the waters of nearly thirty streams. The principal tributary is the Conejos River, coming in from the west near the lower end of the valley. The Rio Grande receives from the west also the waters of the Alamosa, La Jara, and San Antonio rivers; and from the east, those of the Trinchera, Culebra, and Rio Costilla. About four miles north of the New Mexico state line, the river enters the long Rio Grande Canyon, through which it continues into that state. The Rio Grande receives but little water from any of its tributaries, as the supply of these streams is practically all utilized during the summer time, and most of the supply of the Rio Grande itself is used in the upper part of the valley, so that near the state line there is little water left in the channel. The drainage of the mountains surrounding the northern part of the San Luis Valley is received by the San Luis River, which terminates in the center of the valley in a number of saline lakes having no visible outlets.

The structure of the soil of the greater part of the Rio Grande Valley is such that it readily transmits water, or subirrigates, and its adaptability for holding moisture has enabled the farmers to extend cultivation over a much larger area than could be done without this aid. The soil is generally rich, and farming by irrigation is profitable throughout the valley. Extensive experiments have been made with artesian wells, especially in Rio Grande and Saguache counties, but have not been altogether successful.

THE GRAND RIVER.

The Grand River, draining a considerable portion of western Colorado, rises in the eastern part of Middle Park, among some of the highest mountains of the Continental Divide, and is the most important tributary of the Colorado River. The river runs for the greater part of its course through a region of plateaus, flowing mostly in steep-walled canyons. The courses of the Eagle, Roaring Fork, Gunnison, and Dolores rivers, tributaries of the Grand, are marked by similar characteristics. The valley lands are limited in area and the water supply for irrigation generally far exceeds the requirements. Shortages sometimes occur, however, on some of the branches and small creeks, where irrigation works are extensive and considerable areas are under ditch. This is the case on Uncompahgre River and its tributaries, and a large diversion canal from Gunnison River is planned.

The water is furnished to bench lands along the Grand River by a number of pumping plants. These benches, terrace like, rise above the valley of the stream and lie between the valley and the plateau. Several pumping plants now in successful operation at Grand Junction are operated by waterpower. Numerous steam-power plants have been abandoned, as the cost of operating them was found to be greater than the returns from the products. There are a number of large irrigating ditches in this part of Colorado, and nearly all farm crops are grown that can be raised in this latitude. Orchard fruits, including apples, peaches, apricots, etc., and small fruits, are produced in considerable quantities. Alfalfa is a staple product, and in 1899 in the basin of the Grand, the area devoted to this forage crop was approximately 75,000 acres, with a production of about 210,000 tons.

The establishment of a large beet-sugar factory at Grand Junction has given an impetus to the cultivation of beets, and the acreage devoted to this crop is growing larger each year.

Dolores River is the least important tributary of the Grand River in Colorado, and has its sources in La Plata and San Miguel Mountains. The ditches are generally small, the most notable being that which irrigates about 8,000 acres in the vicinity of Cortez.

THE SAN JUAN RIVER.

Flowing south from the San Juan Mountains are a number of streams, uniting at the base of the range into the San Juan, which flows westward through a plateau region to the junction with the Colorado. In the mountains these streams have a rapid fall which becomes greatly lessened in the channel across the plateau, the grade of the river towards its mouth being very much less than that of the Colorado.

The San Juan, while an important tributary of the Colorado, is but little utilized for irrigation in Colorado. Three of its affluents, the Rio de los Pinos, La Plata, and Las Animas rivers, and their small branches, supply almost all of the water which is diverted into ditches in this drainage basin. The valleys through which they flow are comparatively narrow, and the area irrigated is not large.

THE GREEN RIVER.

Very little land is irrigated in Colorado in the valley of the main stream of this river, irrigation being confined to

the basin of the Yampa or Bear River, in Routt county, and to the White River in Rio Blanco county.

The Yampa or Bear River, which drains Routt county, in the extreme northwestern part of the state, has its sources in Egeria Park, with branches rising in the Elk Head range on the north, and the White River divide on the south. Its valley varies in width from one-fourth of a mile to five miles, and is inclosed in canyons at only a few points in its course of 150 miles. The entire valley was formerly covered with a luxuriant growth of native grasses, which extended to the summits of the low ranges, but of late, the ranges have been overstocked, and the former rank growth of forage has been partially destroyed. The open prairie country extends back from the river for a considerable distance, until it reaches an altitude of 7,000 or 8,000 feet, where there is a belt of quaking-aspen timber, and above this, a heavy growth of red and white spruce. Croppings of coal, mostly bituminous, are found throughout the valley.

In this valley the chief industry is cattle raising, and the principal crops are hay and forage. The development of agriculture on any large scale has been greatly retarded by the isolation of the valley and the lack of transportation facilities.

The irrigation ditches are, for the most part, owned by the farmers or ranchmen, either individually or coöperatively, and are simply constructed and comparatively inexpensive.

The total area of all farms in the valley of the Bear River is 190,503 acres, of which 53,977 acres were improved, and 44,542 acres were irrigated in 1899.

THE WHITE RIVER.

The White River rises in the timber reserve in the mountains on the eastern side of the White River plateau. North and South Forks are fed by the snows on the same high peaks, though they flow in widely separated channels for a long distance before joining at Buford. The White River carries a large amount of water, its capacity at Meeker averaging 300 second feet at normal stage. This stream and its tributaries drain all of Rio Blanco county. The drainage basin is rough, and of little value except for stock raising. The valley is broad, and the cultivated areas are devoted to hay and forage crops, which are fed to the range stock.

The area irrigated in 1899 was 21,381 acres. This district is subject to early frosts which sometimes ruin almost the entire grain crop. Coal is found in great abundance in this region.